MICHIGAN CHAMBER OF COMMERCE

MEMORANDUM

To: Members of the House Committee on Energy and Technology

From: Doug Roberts, Jr., Director of Environmental and Energy Policy

Subject: House Bills 4562, 4539, 4319 – Renewable Portfolio Mandates

Date: June 20, 2007

The purpose of this memo is to inform you of our **opposition** to renewable energy portfolio mandates and **House Bills 4562, 4539, and 4319**. When considering long-term energy policy, Michigan job providers are seeking policies that provide reliable energy at an affordable price. Renewable energy mandates fail to deliver energy that is either affordable or reliable.

- **Cost of Renewable Mandates -** The chairman of the Public Service Commission, Peter Lark, has recommended in his 21st Century Energy Plan that Michigan impose a 10 percent renewable portfolio mandate by 2015. Complying with this mandate will cost Michigan ratepayers somewhere **in excess of $6 billion**. (See Attached worksheet). House Bills 4562, 4539, 4319 would impose mandates at different rates and levels but the costs would be similar.

- **Reliability Issues of Mandates –** A key finding of the 21st Century Energy Plan is that major base-load generating capacity will need to be constructed to meet Michigan's future electricity demands. Base-load capacity is intended to be operated as much of the time as possible. Wind energy capacity simply will not satisfy this demand. Wind energy only operates when the wind blows, not necessarily when electricity is needed. Construction of major new wind power capacity, by definition, will not satisfy Michigan's future base-load electricity needs and will need to be backed up by additional electrical infrastructure to meet future demand.

Current Energy Rates

In evaluating proposed energy policies, we urge you to consider the impact policies will have on energy rates and Michigan's ability to compete for jobs. Current energy rates in Michigan are slightly below the national average and are comparable to most of the Great Lakes states. However, a comparison of commercial and industrial energy rates with states that Michigan often competes with for jobs and investment reveals that Michigan has higher rates.

EIA 2005 data*	Industrial	Commercial	Residential	Mandatory Renewable Requirement
Michigan	5.32	7.84	8.40	No
Ohio	5.10	7.93	8.51	No
Indiana	4.42	6.57	7.50	No
Wisconsin	5.39	7.67	9.66	10% by 2015
Kentucky	3.60	6.01	6.57	No
South Carolina	4.55	7.39	8.67	No
Alabama	4.52	7.50	8.00	No

(Data compiled from the United States Energy Information Administration. Numbers are in cents-per-kilowatt hour.)

Michigan Chamber Position on Renewable Energy
The Michigan Chamber of Commerce supports renewable energy and efforts to provide incentives to help make renewable energy more affordable in Michigan. We strongly oppose mandates of high-priced renewable energy that will drive up costs for all customer classes.

During the 2005-2006 legislative session, bipartisan legislation was signed into law that provides incentives to help in the production and sale of renewable fuels (ethanol and bio-diesel). The legislation contained several incentives including lowering the gas tax on renewable fuels, providing grants to gas stations to install renewable fuel pumps, and requiring the state motor fleet to use renewable fuels. To help promote renewable electricity, the state could follow the same model established for fuel.

Renewable Portfolio Mandates
There are a number of plans currently under discussion to mandate the use of renewable energy. This analysis focuses on the plan put forward in the 21st Century Energy Plan. The numbers in this analysis would be adjusted upward to reflect the specifics in House Bills 4562, 4539, 4319.

Production Cost of Wind Energy
The 21st Century Energy Plan would require Michigan to purchase 8,540,000 MWh of renewable energy by 2015. The plan found that wind power is the most economical and plentiful renewable resource in Michigan. For illustration purposes, we assume the mandate would be achieved with 100 percent wind energy. (In actuality, other sources would be needed, as Michigan doesn't have sufficient utility quality wind resources to satisfy a 10% RPS).

By utilizing standard industry protocols of 1.5 MW per turbine combined with recent rate filings in Wisconsin that show the cost of wind energy per capacity at $1,800,000 per MW (In Wisconsin filings have ranged between $1,800,000 and $2,100,000 per MW), we can determine that the total cost to purchase 8,540,000 MWh of wind energy is **$6,266,700,000.** (See attached WORKSHEET for full cost explanation).

Other Costs and Issues Associated with Wind Energy
There are a number of other issues and costs associated with wind energy which are difficult to calculate but have the potential to further complicate and increase the costs of meeting a renewable energy mandate.

- *Transmission Costs* - The plan itself notes that the lack of transmission capacity will be a serious impediment to the installation of wind energy. In many cases, Michigan does not have existing built transmission in the parts of our state where the wind is optimal for energy production. Addressing this issue could cost ratepayers hundreds of millions of dollars.

- *Zoning and Siting Issues* - Michigan's best wind is generally located along the Great Lakes shorelines. Current efforts to locate wind energy facilities along Lake Michigan have run into local zoning battles resulting in the cancellation of some wind energy projects. Last legislative session, Representative Howard Walker introduced HB 4648 to establish statewide zoning standards for wind energy facilities. The legislation was opposed by the same environmental groups who are pushing this mandate.

- *Federal Tax Credit* – The federal tax credit for wind energy is extended on a year-to-year basis. There is often a vigorous debate about the value of this credit. If Congress were to allow the wind production tax credit to expire, the price of new wind power would effectively rise by approximately 20 percent.

- *Mandates Interfere with Market Price* – The effect of a renewable mandate would be to generally increase the costs of deploying renewables in Michigan. If a renewable mandate is instituted, sellers of power from renewable facilities would gain the upper hand in a negotiation. The mandate would allow sellers to charge higher prices and the utility would be forced by law to buy the higher priced energy. Ultimately, these costs would be paid by ratepayers.

Reliability Issues

Michigan can not build a 21st century high tech economy if we do not have reliable consistent power. Problematic to Michigan ratepayers is that all of these costs associated with renewable energy will be incurred, yet Michigan will still not have enough energy to meet future demands. The 21st Century Energy Plan envisions that the lion's share of renewable sourced electricity will come from wind. But a recent report released by the Next Energy Center prepared for the Michigan Department of Environmental Quality found that due to the intermittency of wind the contribution of wind energy towards meeting energy capacity needs is only 12 percent. This means that for each 100 MW of wind capacity, you must add 88 MW of other more dependable generation to meet capacity needs. Therefore, if Michigan does spend **six billion dollars** to deploy thousands of wind turbines, it will still have to spend billions of dollars on new base load generation to back up wind turbines in order to satisfy Michigan's future electricity needs. This is an unnecessary expense that Michigan simply cannot afford.

Job Creation

Proponents of wind energy claim that by mandating renewable energy it will lead to job creation. However, proponents usually can't back up these claims with facts. For a quick comparison, for under half the cost of a 10 percent renewable mandate, Michigan could build a new nuclear plant (cost $2 to $3 billion). A new nuclear plant would provide 1,200 MW of reliable energy and would create 1,800 temporary construction jobs and 500 permanent jobs. The average salary for nuclear engineers in 2003 was $80,000. In addition, a nuclear plant would have all of the clean air benefits that wind energy provides (Source *Michigan Forward*, March/April '07, page 10).

Conclusion

The Michigan Chamber urges you to vote 'No' on **House Bills 4562, 4539, and 4319**, a bill that would establish a renewable portfolio mandate. The facts clearly demonstrate that such a mandate will drive up energy costs, and do little for long-term energy reliability. If you have any questions about the material, or if we can be of further assistance please feel free to contact me at (517) 371-2100 or droberts@michamber.com.

WORKSHEET TO EVALUATE COSTS OF RENEWABLE MANDATE

The 21st Century Energy Plan recommends that the Legislature mandate the use of renewable energy. Specifically, the plan calls for legislation to require that by 2015, 10 percent of electricity consumed in Michigan must come from renewable sources. To help calculate the costs of this proposed mandate, this analysis utilizes assumptions taken directly from the plan.

According to numbers in the plan, in 2006, total electric sales in Michigan were 105,000,000 megawatt hours (MWh). The plan assumes that by 2015 electric sales will grow by 1.2 percent. Using this 1.2 percent growth factor, by 2015 Michigan will need 116,900,000 MWh of energy. Therefore, to meet a 10 percent standard of renewable energy by 2015, it would require 11,690,000 MWh of renewable energy.

The various legislative proposals count existing renewable energy in different fashions. The 21st Century Energy Plan essentially counts 3 percent of today's renewable sources towards meeting the 10 percent goal. This means that 3,150,000 MWh are already in production. Therefore, the amount of new renewable energy that would have to be installed is 8,540,000 MWh (11.69 MWh – 3.15 MWh).

2006 Total Electric Sales	105,000,000 MWh
2015 Projected Electric Sales (1.2 growth)	116,900,000 MWh
10% Renewable Mandate by 2015	11,690,000 MWh
Less Allowable Existing Renewable Sources (3%)	3,150,000 MWh
Mandated Renewable Energy	**8,540,000 MWh**

The 21st Century Energy Plan found that wind power is the most economical and plentiful renewable resource in Michigan. In order to estimate the costs of a 10 percent renewable portfolio Mandate and utilize a conservative methodology, we assume only wind will be used to meet the requirements of the renewable energy sources. (In actuality, other sources, such as methane gas and anaerobic digesters would be needed, as Michigan doesn't have sufficient utility-quality wind resources to satisfy a 10 percent RPS)

We assume that each wind turbine will have a capacity of 1.5 MW. This is a common size of wind turbine. The plan recognizes that generally with Michigan's best wind resources, a wind turbine operates on average 28 percent of the time. This is called a capacity factor. With a capacity factor of 28 percent, a 1.5 MW wind turbine would operate 2,453 hours (28 percent of 8,760) hours in a year, producing an annual total of 3,679.5 MWh of electricity (2,453 x 1.5 MW).

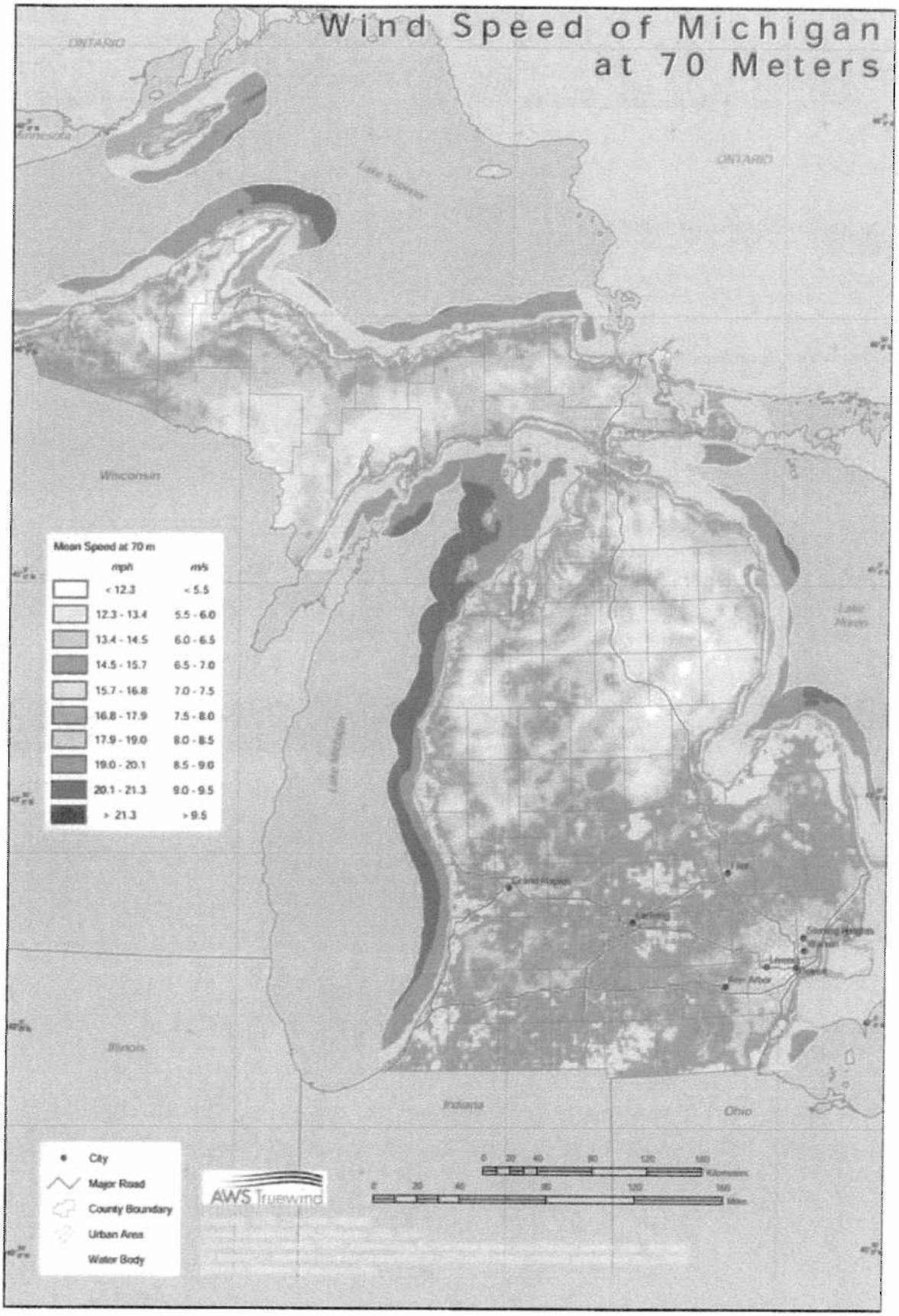
Wind Turbine Capacity of Each Wind Turbine	1.5 MW
Wind Capacity Factor	28%
Hours Operating Per year (28% of 8,760 hours in year)	2,453 hours
Annual Total of Energy from Each Wind Turbine	**3,679.5 MWh**
(1.5 MW x 2453 Hours Operating Per Year)	

To determine how many new 1.5 MW capacity wind turbines would be needed to satisfy the 10 percent RPS mandate in 2015, divide the amount of renewable electricity needed in 2015 (8,540,000 MWh) by the annual electricity that would be expected to be produced by a 1.5 MW wind turbine (3,679.5 MWh). **The result is that 2,321**

Mandated Renewable Energy	8,540,000 MWh
Divided By Annual Total of Each Wind Turbine	3,679.5 MWh
Total number of Wind Turbines Needed	**2,321**

The estimated cost of wind capacity is $1,800,000 per MW of wind capacity. (This is derived from recent rate filings in Wisconsin, where Renewable Energy has been mandated, costs have ranged between $1,800,000 per MW and $2,100,000 per MW). Each 1.5 MW turbine would cost (1.5 X $1,800,000) $2,700,000. Multiplying that per-turbine cost by the number of required turbines (2,321 turbines) provides a cost estimate of **$6,266,700** to satisfy a 10 percent renewable mandate by 2015.

Cost of Wind Capacity per MW (Wisconsin Data)	$1,800,000 per MW
Cost of Each Wind Turbine (1.5 Capacity Factor x 1,800,000 Per MW)	$2,700,000 per MW
Total Cost for Production of 10% Mandate	**$6,266,700,000**
(2,321 Turbines x $2,700,000)	


Wind Speed of Michigan
at 70 Meters
ONTARIO
Minnesota
Lake Superior
ONTARIO
Wisconsin
Lake Huron
Lake Michigan
Grand Rapids
Flint
Lansing
Warren
Sterling Heights
Livonia
Ann Arbor
Illinois
Indiana
Ohio
Mean Speed at 70 m
mph
m/s
< 12.3
< 5.5
12.3 - 13.4
5.5 - 6.0
13.4 - 14.5
6.0 - 6.5
14.5 - 15.7
6.5 - 7.0
15.7 - 16.8
7.0 - 7.5
16.8 - 17.9
7.5 - 8.0
17.9 - 19.0
8.0 - 8.5
19.0 - 20.1
8.5 - 9.0
20.1 - 21.3
9.0 - 9.5
> 21.3
> 9.5
City
Major Road
County Boundary
Urban Area
Water Body
0 20 40 80 120 160
Kilometers
0 20 40 80 120 160
Miles
AWS Truewind